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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/642,929

08/18/2003

Kenji Sakai

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

03/19/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/642,929	Applicant(s) SAKAI ET AL.	
	Examiner Anita K. Alanko	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 6-10 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4 and 6-10 is/are allowed.
- 6) ☒ Claim(s) 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farkas et al (US 6,444,569 B2) in view of Ma et al (US 2003/0079416 A1).

Farkas discloses a method for polishing a polishing target (Fig.6), the method comprising:

polishing the polishing target 63 using a first polishing composition to remove part of the outer portion of the conductor layer (Fig.6-7, higher speed bulk copper polish on a first platen, step 17, col.6, lines 18-35);

polishing the polishing target 62 using a second polishing composition to remove a remaining part of the outer portion of the conductor layer (slower interfacial copper polish process on second platen, step 19, col.7, lines 17-32), the second polishing composition being different from the first polishing composition (col.7, lines 23-25); and

polishing the polishing target 61 using a third polishing composition to remove the outer portion of the barrier layer (step 22, col.9, lines 16-22).

Farkas fails to disclose that the third polishing composition comprises nitric acid or lactic acid. Rather, Farkas discloses that the third composition comprises ammonium hydroxide (col.9, line 23).

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Ma teaches a useful barrier layer polishing composition that is different from a copper polishing composition. The barrier layer polish comprises an abrasive such as silicon dioxide [0068], nitric acid [0074], corrosion inhibitor of benzotriazole [0073] and water (inherent in the solutions). It would have been obvious to one with ordinary skill in the art to polish using the barrier layer polishing solution of Ma in the method of Farkas because Ma teaches that it is a useful barrier layer polishing solution after copper polishing to obtain a planar surface.

Claim 25 would have been obvious because the substitution of one known element (polishing with an acidic solution) for another (polishing with an alkali) would have yielded predictable results (that of barrier layer polishing) to one of ordinary skill in the art at the time of the invention.

Farkas contains a method with differed from the claimed method by the substitution of some components with other components (the type of barrier layer polishing solution).

Ma teaches that the substituted components and their functions for polishing barrier layers were known in the art.

Thus, one of ordinary skill in the art could have substituted one known element for another and the results of the substitution would have been predictable, that of barrier layer polishing.

Allowable Subject Matter

Claims 2-4 and 6-10 are allowed.

Response to Arguments

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Applicant's arguments with respect to claim 25 have been considered but are moot in view of the new ground(s) of rejection. The outstanding rejection over Farkas is withdrawn, and claim 25 is now rejected under 35 USC 103 over Farkas in view of Ma. Ma is newly cited to teach the obviousness of using nitric acid in a barrier layer polishing step.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Small is cited to show a method of polishing barrier layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/
Primary Examiner, Art Unit 1792